

## CLAIMS:

1. Method for positioning a substrate (30) and a patterning device (20) at a patterning position with respect to each other, at which position the patterning device (20) is activated to apply a pattern (35) to the substrate (30), the method comprising the step of determining an actual relation between a patterning position of the substrate (30) and the patterning device (20) with respect to each other and a position of the pattern (35) on the substrate (30).

2. Method according to claim 1, comprising the following steps:

- positioning the substrate (30) and the patterning device (20) at a predetermined test position with respect to each other;
- applying a test pattern (38) to the substrate (30) by means of the patterning device (20); and
- performing a measurement in order to obtain a result relating to an actually obtained position of the test pattern (38) on the substrate (30), wherein the actual relation between a patterning position of the substrate (30) and the patterning device (20) with respect to each other and a position of the pattern (35) on the substrate (30) is determined on the basis of the result which is obtained by the measurement.

3. Method according to claim 2, wherein the measurement is performed in an optical manner using pattern recognition.

4. Method according to claim 2 or 3, wherein an offset between an actually obtained position of the test pattern (38) on the substrate (30) and a predetermined position of the test pattern (38) on the substrate (30) is measured, wherein the predetermined position of the test pattern (38) on the substrate (30) is determined on the basis of a predetermined relation between a patterning position of the substrate (30) and the patterning device (20) with respect to each other and a position of the pattern (35) on the substrate (30), and wherein the actual relation between a patterning position of the substrate (30) and the patterning

device (20) with respect to each other and a position of the pattern (35) on the substrate (30) is determined by correcting the predetermined relation for the offset as measured.

5. Method according to claim 2 or 3, wherein an actually obtained position of the test pattern (38) on the substrate (30) is measured, and wherein the actual relation between a patterning position of the substrate (30) and the patterning device (20) with respect to each other and a position of the pattern (35) on the substrate (30) is determined by linking the actually obtained position of the test pattern (38) on the substrate (30) as measured to the predetermined test position.

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6. Method according to any of claims 1-5, comprising the step of determining a rotation angle ( $\phi$ ) between an actual straight line of movement of the substrate (30) and the patterning device (20) with respect to each other and a predetermined straight line of movement of the substrate (30) and the patterning device (20) with respect to each other, 15 wherein the actual relation between a patterning position of the substrate (30) and the patterning device (20) with respect to each other and a position of the pattern (35) on the substrate (30) is corrected for the rotation angle ( $\phi$ ).

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7. Method according to claim 6, wherein the rotation angle ( $\phi$ ) is determined in an optical manner using pattern recognition.

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8. Method according to claim 6 or 7, wherein the predetermined straight line of movement of the substrate (30) and the patterning device (20) with respect to each other is indicated on the substrate (30) by means of two reference markers (36, 37).

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9. Method according to claim 8, wherein the rotation angle ( $\phi$ ) is determined by moving the substrate (30) and the patterning device (20) with respect to each other according to the actual straight line of movement and comparing the positions of the reference markers (36, 37) in a direction substantially perpendicular to the actual straight line of movement.

10. Method according to any of claims 1-9, applied for the purpose of printing displays, in particular PolyLED displays or liquid crystal displays, wherein the patterning device comprises a print head (20) having at least one nozzle (22) for releasing ink droplets (21).

11. Patterning machine (1), suitable for carrying out the method according to claims 1-10, comprising:

- a first receiving member (53) for receiving a substrate (30);
- a second receiving member for receiving a patterning device (20) for applying a pattern (35) to the substrate (30);
- moving means (50) for moving the substrate (30) and the patterning device (20) with respect to each other;
- a computer (11); and
- detecting means for detecting markers (36, 37) and patterns (38) on the substrate (30), wherein the computer (11) is programmed such as to recognize the markers (36, 37) and the patterns (38) and to determine positions of the markers (36, 37) and the patterns (38) with respect to the moving means (50).

15 12. Patterning machine (1) according to claim 11, wherein the detecting means comprise at least one camera (25) for providing images of the substrate (30) to the computer (11), and wherein the computer (11) is programmed such as to capture the images from the camera (25), as well as to recognize the images.

20 13. Patterning machine (1) according to claim 12, wherein the computer (11) is programmed such as to perform an aligning process comprising the following steps:

- controlling the moving means (50) such as to position the substrate (30) and the patterning device (20) at a predetermined test position with respect to each other;
- transmitting an activating pulse to the patterning device (20) in order to apply a test pattern (38) to the substrate (30);
- controlling the moving means (50) such as to position the substrate (30) and the camera (25) at the predetermined test position with respect to each other; and
- measuring an offset between an actually obtained position of the test pattern (38) and a predetermined position of the test pattern (38) by means of the camera (25), using pattern recognition.

30 14. Patterning machine (1) according to claim 12, wherein the computer (11) is programmed such as to perform an aligning process comprising the following steps:

- controlling the moving means (50) such as to position the substrate (30) and the patterning device (20) at a predetermined test position with respect to each other;
  - transmitting an activating pulse to the patterning device (20) in order to apply a test pattern (38) to the substrate (30);
- 5 - detecting an actually obtained position of the test pattern (38) on the substrate (30) by means of the camera (25), using pattern recognition.

15. Patterning machine (1) according to claim 13 or 14, wherein the computer (11) is programmed to perform the aligning process more than one time for one substrate (30), and  
10 wherein the aligning process is alternated with a process during which a pattern (35) is applied to the substrate (30) by means of the patterning device (20).

16. Patterning machine (1) according to any of claims 11-15, wherein the moving means comprise an X-Y table (50).

15 17. Patterning machine (1) according to any of claims 11-16, wherein the patterning device comprises a print head (20) having at least one nozzle (22) for releasing ink droplets (21).

20 18. Printed display, in particular a PolyLED display or a liquid crystal display, comprising at least two reference markers (36, 37) and a printed test pattern (38) which is positioned outside an area having a functional pattern (35) which serves for displaying an image.